

NEW SHARKS AND FISHES FROM WESTERN AUSTRALIA.

PART 3.

By G. P. WHITLEY.

(Plate xi. and text-figs. 1-3.)

In continuation of this series, the following nuncupative and descriptive notes were prepared during my field work in Western Australia for the Division of Fisheries, C.S.I.R., in 1945. There aboard the ketch *Isobel* I travelled from Fremantle to Derby and back to Geraldton, visiting various islands en route, and collected fishes, shells, etc. The present paper is purely incidental to the main purpose of that voyage which was to identify surface fishes (especially Clupeidae and Scombroids) to which we were usually directed by aeroplane and two-way radio.

By trolling with bone jigs, feather lures, rags, etc., 16 different species of fishes were caught during the *Isobel* cruise in July-December, 1945. Some were new to the Western Australian fish catalogue. In order of first capture they were:—

- 1.—Southern Bluefin Tuna *Thunnus maccoyii* Castelnau, 1872.
- 2.—Striped Tuna *Katsuwonus pelamis* (Linné, 1758).
- 3.—Yellowfin Tuna, *Neothunnus macropterus* (Temminck & Schlegel, 1844).
- 4.—Samson Fish *Seriola hippos* Gunther, 1876.
- 5.—Northern Bluefin Tuna *Kishinoella tonggol* (Bleeker, 1851).
- 6.—Large-scaled Tunny *Grammatoryncus bicarinatus*
(Quoy & Gaimard, 1825).
- 7.—Spotted Spanish Mackerel *Cybium queenslandicum* (Munro, 1943).
- 8.—Mackerel Tuna *Euthynnus alletteratus* (Rafinesque, 1810).
- 9.—Yellow-tail Skipjack *Ferdauia claeszooni* sp. nov.
- 10.—Skipjack *Caranx papuensis* Alleyne & Macleay, 1877.
- 11.—Narrow-barred Spanish Mackerel, *Cybium commerson* (Lacépède, 1800).
- 12.—Pike *Sphyræna akerstromi* sp. nov.
- 13.—Sergeant Fish *Rachycentron pondicerianum* (Cuv. & Val., 1832).
- 14.—Broad-barred Spanish Mackerel *Indocybium semifasciatum*
(Macleay, 1883).
- 15.—Whitefish *Chorinemus lysan* (Bonnaterre, 1788).
- 16.—St. Peter's Whitefish *Scomberoides sanctipetri* (Cuv. & Val., 1832).

Hundreds of other fishes were obtained by means of hand-lining, dredging, netting, firearms, explosives, traps, in plankton, stomach-contents of larger fishes, etc., but most of them are outside the scope of this paper.

Family GALEIDAE.

Genus GALEOLAMNA Owen, 1853.

GALEOLAMNA (GALEOLAMNOIDES) ISOBEL, sp. nov.

(Fig. 1.)

Diagnosis: A Western Australian Whaler Shark with only about 24 or 25 serrated teeth across either jaw, black tips to some fins, interdorsal ridge developed anteriorly, and details as described and figured below.

Head: As usual in the genus. Predorsal profile not gibbous. Eyes rather large, circular, with nictitating membrane; pupil a vertical slit.

Interorbital convex. Snout gothic arched, blunter than in *Longmania calamaria* (to which it bears a superficial resemblance except that it has less than thirty teeth across jaws). Head 4.55 in total length. Preoral length more than width of mouth. No spiracle. Teeth of both jaws serrated on cusps and shoulders. Dental formula:—

$$\frac{11.1.1.12}{12.12} = \frac{25}{24}. \text{ Teeth deflected outwards in each jaw, notched, and}$$

serrated almost to tips, those on either side of symphysis smaller than lateral ones. Inner edge of each tooth in upper jaw slightly convex; outer edge deeply notched with coarse serrae on basal shoulder.

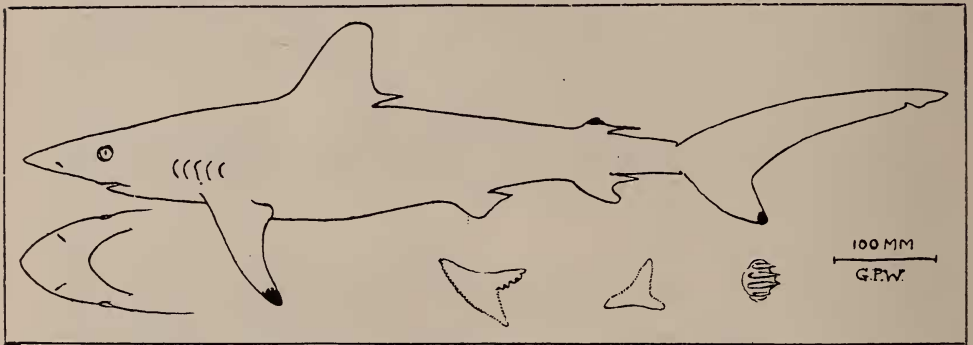


Fig. 1. Whaler Shark, *Galeolamna isobel* Whitley. Type.

Nostrils nearer mouth than to end of snout. Nasal cirrus small. Labial folds very short. Endolymphatic openings inconspicuous.

Body: Spindle-formed. Lateral line obsolescent. An interdorsal ridge present anteriorly, becoming indistinct before the second dorsal fin. No keel on caudal peduncle which has a lunate pit above and below. Pit organs small and numerous. No umbilical scar. Shagreen of small, close-set, imbricate denticles, each crossed by three (or sometimes four or five) carinae.

Measurements: Following the symbols listed in Proc. Linn. Soc. N.S.W., lxviii., 1943, pp. 114-115, the dimensions in mm. are as follows:—

H.1	158	H.10	(no spiracle)
2	200	11	13
3	76	12	48
4	83	13	67
5	188	14	62
6	412	15	1
7	18	16	2
8	17.5	17	17
9	80	18	17
B.1	650	F.8	65
2	450	9	46
3	280	10	37
4	118	11	32

5	90	12	62
6	30	13	—
7	30	14	130
		15	50
F.1	102	16	250
2	77	17	38
3	30	18	37
4	209	19	26
5	20	20	119
6	22	21	270
7	36	22	96

Additional measurements are: Total length, 910 mm., or about 3 feet overall. Second to fourth gill-slits subequal, 20 mm. Eye to first gill-opening, circa 78. Tip of snout to outer angle of nostril, 40. Inner angle of nostril to mouth, about 37. Middle of vent to end of tail, 478, and thus in posterior half of shark.

Fins as usual in the genus. First dorsal origin nearer pectorals than ventrals. Anal larger than second dorsal, its origin before that of the latter and its end behind that of second dorsal. Pectoral angle reaching below first dorsal origin. Upper caudal lobe longer than head, the lower rounded.

Colour: Grey, with iridescence, above and white below. Iris pale bronze. Second dorsal, lower caudal lobe, and pectoral fins tipped with black.

Described and figured from the holotype, an immature female shark, 910 mm. long and 8 lb. in weight. Austr. Mus., Regd. No. I.B.1493.

The liver weighed 3 oz. Stomach contained a piece of fish (*Euthynnus*) used as bait on the hand-line. Vertebrae with Maltese Cross calcification.

Locality: Long Island, between Cape Preston and the Mary Anne Group, Western Australia; 31/10/45.

Apparently most closely allied to *Galeolamna fowleri* Whitley (Austr. Zool., x., 1944, p. 255, Ex mouth Gulf Area), but differs in having larger eye, smaller gill-slits and different teeth (as described above), serrated in both jaws; the black tips to some of the fins are also characteristic.

Family SPHYRAENIDAE.

Genus SPHYRAENA Bloch & Schneider, 1801.

SPHYRAENA AKERSTROMI, *sp. nov.*

(Plate xi., fig. 1.)

D.v./i., 9; A.i., 8; P.i., 13; V.i., 5; C.15. L.lat. 76 to hypural + 5 to small scales on middle of tail. L.tr. 9/1/15 at first dorsal, to 10/1/9 between second dorsal and anal, and 5½/1/5 on caudal peduncle. About 20 predorsal scales.

Head (353 mm.) 3.7, greatest depth of body (222) nearly 6 in length to end of shortest middle caudal rays (1320). Eye (45). 3.8 in snout (174). Head wedge-shaped. Eye moderate. Nostrils slit-like. Anterior ends of intermaxillary fissures (Schnauzenfurche of Klunzinger) separated. Upper jaw mainly bordered by intermaxillary. A supplemental bone over the maxillary which reaches below middle of eye, its posterior border rounded. Upper jaw with a single series of conical teeth, nearly all subvertical and with four enlarged compressed canines anteriorly. Lower jaw with a single

series of vertical teeth larger than outer ones of upper jaw. A large symphyseal canine. Palatines with about four distant canines in a row anteriorly and a further series behind them. Preopercular margin rounded, entire. Operculum with two flat flexible, weakly serrate spines. Cheek-scales in about thirteen to fifteen rows. A few small scales on the top of head posterior to eye and on the flat interorbital, which has a few ridges at its sides. No gill-rakers. Pseudobranchiae present.

Body with back and belly rather flattened, sides compressed, shoulders and lower sides rounded, giving a very solid appearance. Cycloid scales cover the body and there are many auxiliary scales along the back, but scales do not extend over the fins. They are finely granulated, oval, deeper than long. Lateral line with simple tubes, descending to below first dorsal, thence straight to middle of tail. Seventeen interdorsal scales. Vent small, slightly in advance of anal fin.

First dorsal originating before level of pectoral tip and behind level of origin of ventrals, its first two spines subequal (110 mm.), one-third head, or shorter than postorbital. Interdorsal space (245 mm.) more than twice length of base of second dorsal (111). Second dorsal and anal fins with excavate margins. Anal origin and end behind levels of origin and end of second dorsal. Pectoral subequal to postorbital, its origin midway between dorsal and ventral profiles. Ventrals truncate, much shorter than pectorals, and situated below the middle of the addressed pectorals. Caudal biconcave, with V-shaped median notch.

Colours in life: Grey to bluish-silver above, with eighteen dark grey oblique cross-bars above the lateral line, becoming indistinct fore and aft. Iris pale bronze to brownish. Fins olivaceous-greyish, the ventrals lightest in tone, the pectorals with most olivaceous tinge. Opercular flap and pectoral axil dark grey. The specimen had a slightly disagreeable odour even when alive.

Dimensions:—

- Snout to end of shortest caudal rays, 1,320 mm.
- Standard length to hypural joint, 1,210.
- Lower jaw projects beyond upper, 20.
- Interorbital, 105.
- Preorbital, 22.
- Postorbital (horizontal from eye), 146.
- Maxillary, 196.
- Width of head, 134.
- Depth of head, 165.
- Width of body, 147.
- Depth between 2nd dorsal and anal origins, 209.
- Depth of caudal peduncle, 94.
- Predorsal length, 509.
- First dorsal fin: height, 110; base, 125; last spine, —.
- Second dorsal fin: height, 135; base, 111; last ray, 65.
- First dorsal origin to second dorsal origin, 370.
- End of second dorsal to upper caudal ray, 216.
- End of second dorsal to end of anal, 145.
- Anal fin: height, 135; base, 97; last ray, 61.
- End of anal to lowest caudal ray, 225.
- Pectoral: length, 144; base, 41.

Snout to ventral origin, 472.

Ventral: length, 92.

Ventral origin to that of anal, 437; to pectoral (obliquely), 130; to origin of first dorsal, 214.

Distance between tail-tips, 250; upper caudal ray about 224.

Liver smooth, with three or four lobes. Pyloric caeca numerous. The stomach contained the bones and fin-rays of a couple of large fish. Swim bladder subcylindrical, with two rounded lobes anteriorly. Immature female, left ovary (365 x 40 mm.) larger than right (330 x 50), pale pink, no ova visible.

Described and figured from an immature female, 1,445 mm., or 4 ft. 10 in. in total length.

Locality: Off Lowendal Island, between Barrow Island and the Monte Bello Group, Western Australia. Caught on trolling line with strip of white fish skin (*Chorinemus*) as lure, September 17, 1945, when the writer was aboard the ketch *Isobel*, under charter to the C.S.I.R. Division of Fisheries.

Affinities: Comes down to the West Indian Barracuda (*Sphyræna picuda*) in Weber and de Beaufort's key (Fish. Indo-Austr. Archip., iv., 1922, p. 218, et seq.), but differs very much in the size of the eye and its ratios to other parts of the head; also the maxillary is more than half the length of the head, the ventrals are much shorter than the pectorals, and the outline of the caudal fin is different. Compare, however, the variation in further specimens mentioned below.

Variation: A second specimen of this Pike was trolled off False Cape Bossut, Western Australia, on September 29, 1945. It agrees in general with the Lowendal Island one, but has the following noteworthy characters:—

D.v./i., 8; L.Lat. 115 to hypural + 5 (extraordinary variation!). Tr. 11/1/22 at first dorsal to 12/1/13 between second dorsal and anal, and 7/1/7 on caudal peduncle. More than 20 predorsal scales.

Head (335 mm.) 3.9, depth (210) 6.3 in length to end of shortest middle caudal rays (1,334). Eye (37) 4.0 in snout (149).

Maxillary reaching below anterior margin of eye. Only two slightly enlarged canines in upper jaw, anteriorly, and one, barely enlarged in lower jaw anteriorly; six to seven large teeth along each palatine. A few spiny rudimentary gill-rakers.

Twenty-six interdorsal scales. First dorsal originating behind level of pectoral tip, and behind level of origin of ventrals, its first two spines (97 mm.) less than one-third head and shorter than postorbital (143). Interdorsal space, 281 mm. Base of second dorsal, 111. Pectoral length, 142. Ventrals inserted slightly behind the level of the middle of the addressed pectorals, 88 mm. long. Standard length, 1,270. Interorbital, 90. Pre-orbital, 26. Maxillary, 152. Depth between second dorsal and anal origins, 178; of caudal peduncle, 83; predorsal length, 508. First dorsal origin to second dorsal origin, 383 mm. Total length, 4 ft. 11 in.; weight, 38 lb.

A third and smaller example was trolled about six miles west of Emeriau Point, Western Australia, on October 16, 1945. It was similar to the others, but had a dark grey blotch just below lateral line between second dorsal

and anal fins; also two more such blotches on caudal peduncle, but not quite bilaterally symmetrical.

D.v./i., 9; A.i., 8; P.i., 14. L.lat. 83 to hypural + 6 on tail. L.tr. 12/1/14 to 10/1/9 to 5½/1/5. About 23 predorsal scales.

Head (233 mm.) 3.9, greatest depth of body (136) 6.6 in length to end of shortest middle caudal rays (910). Eye (28) nearly 4 in snout (110). Maxillary (115 mm.) reaches below anterior half of eye, its posterior edge concave. Teeth as in specimens described above, but six or seven along palatines. Opercular spines hidden. No scales on interorbital. Some scales extend between bases of caudal rays. About 19 interdorsal scales.

Second dorsal spine (68 mm.), the longest less than one-third head.

Standard length, 835 mm.

Lower jaw projects, 14.

Interorbital, 65.

Preorbital, 16.

Postorbital, 94.

Maxillary, 115.

Width of head, 79.

Depth of head, 100.

Width of body, 83.

Depth between second dorsal and anal origins, 119.

Depth of caudal peduncle, 58.

Predorsal length, 340.

Interdorsal space, 177.

First dorsal fin: height, 70; base, 82; last spine, 32.

Second dorsal fin: height, 90; base, 74; last ray, 43.

First dorsal origin to second dorsal origin, 255.

End of second dorsal to upper caudal ray, 151.

End of second dorsal to end of anal, 86.

Anal fin: height, 87; base, 72; last ray, 45.

End of anal to lowest caudal ray, 140.

Pectoral: length, 94; base, 28.

Snout to ventral origin, 308.

Ventral length, 64.

Ventral origin to that of anal, 312; to pectoral (obliquely), 89; to origin of first dorsal, 132.

Distance between tail-tips, 195; upper caudal ray about 139; lower, 135.

Stomach contained bitten and digested Rock Cod (*Epinephelus*) swallowed tail first. Testes, 240 x 35 mm.

Described from a male specimen, 835 mm. in standard length, or L.C.F. 910, or total length, 38 inches; weight, 11 lb. Caught on a white feather jig.

A fourth small Pike was caught in the fish-trap on Onslow Beach, Western Australia, on November 3, 1945. It agrees in general facies with the above described specimens, but shows variations in scale-counts and colours and the caudal fin is evenly forked, not biconcave. It had the following characters, noted the day after it was caught:—

D.v./i., 7; A.i., 8; P.i., 13. L.lat. 120 to hypural + 5 to base of middle caudal rays. L.tr. 13/1/19 at first dorsal to 15/1/13 between second dorsal and anal, and 7/1/8 on caudal peduncle. About 29 predorsal scales.

Head, 159 mm. (i.e., 3.7 in length to caudal fork).

Greatest depth, 74 (7.9 in L.C.F.).

L.C.F., 590.

Eye, 21.

Snout, circa 74.

Total length, 26 inches.

Weight, 2 lb. 2 oz.

Standard length, 546.

Lower jaw projects, 10.

Interorbital, 29.

Preorbital (smashed), 13???

Postorbital (horizontal from eye), 63.

Maxillary, 73.

Width of head, 44.

Depth of head, 55.

Width of body, 47.

Depth between second dorsal and anal origins, 74.

Depth of caudal peduncle, 35.

Predorsal length, 218.

First dorsal fin: height, 50.

First dorsal fin: base, 58.

First dorsal fin: last spine, 18.

Second dorsal: height, 57.

Second dorsal: base, 51.

Second dorsal: last ray, 26.

First dorsal origin to second dorsal origin, 170.

End of second dorsal to upper caudal ray, 109.

End of second dorsal to end of anal, 54.

Anal fin: height, 55.

Anal fin, base, 44.

Anal fin: last ray, 28.

End of anal to lowest caudal ray, 98.

Pectoral: length, 59.

Pectoral: base, 16.

Snout to ventral origin, 210.

Ventral length, 45.

Ventral origin to that of anal, 187.

Ventral origin to pectoral (obliquely), 58.

Ventral origin to origin of first dorsal, 64.

Distance between tail-tips, circa 80.

Upper caudal lobe, 92.

Lower caudal lobe, 80.

Interdorsal space, 108.

General characters as in previous three specimens, but maxillary barely reaches below anterior margin of eye, and is less than half the length of the head. There are about 30 interdorsal scales, the ventrals originate behind the level of the middle of the adpressed pectorals; caudal evenly forked, the upper lobe longer; the body is more slender than in the other, older, specimens.

Stomach contained yellow scum or liquid. Immature male. Testes, 170 x 5 mm.

Head, etc., preserved.

Colour: General colour, the day after death, dull olivaceous above, white below. Nine well-marked dark lateral blotches between pectorals and level of second dorsal and anal fins and about five more indistinct ones posteriorly. Pupil bluish-black; iris silvery white with a golden to olivaceous upper lid. Tips of jaws dusky. Fins yellow, more or less tinged with olivaceous, except the ventrals, which are white.

This species is named after Mr. Eric Akerstrom, of Geraldton, Western Australia, skipper of the ketch *Isobel*, in appreciation of his successful completion of the cruise and with whose name I would join those of the wireless operator and crew, with due acknowledgments for their services during our five months' trip: Sergeant R. J. Berry, R.A.A.F.; Messrs. Arthur Douglas, Thomas Taylor, Leslie Fletcher, Alfred Pulleine, and Alfred Reichard.

AUSTRALUZZA, *gen. nov.*

Orthotype, *Sphyræna novaehollandiæ* Gunther, 1860.

Differs from true *Sphyræna* in having origin of ventrals much nearer lower jaw than base of caudal, instead of about midway between the two. From the West Indian barracuda (subgenus *Agrioposphyraena*), the new Australian genus differs in having the first dorsal fin, as well as the ventrals, inserted well behind the level of the tip of the adpressed pectoral. The l.lat. scales are more numerous than in most species of *Sphyræna*, the maxillary ceases well before the eye, and the fish is very slender. The Snook should now be called *Australuzza novaehollandiæ*.

FAMILY CARANGIDÆ.

GENUS FERDAUIA Jordan, Evermann & Tanaka, 1927.

Ferdauia Jordan, Evermann and Tanaka, Proc. Calif. Acad. Sci. (4), xvi., 1927, p. 662. *Ex* Jordan, Evermann and Wakiya, MS. Orthotype, *Carangoides jordani* Nichols, 1922, from the Hawaiian Islands.

FERDAUIA CLAESZOOINI, *sp. nov.* (1).

(Plate xi., fig. 2.)

D.vii./i., 28; A.ii./i., 24; P.ii., 19; C.16. Scutes 13. Gill-rakers 7/13. Head (150 mm.) 3.6, depth (160) 3.4 in length to caudal fork (545). Eye, 26 mm.; snout, 60; for other dimensions see tables below.

Head compressed. Lower jaw shorter than upper. Lips rounded. Teeth all villiform, in patches on jaws, vomer and palatines; no outer enlarged teeth. Maxillary not nearly reaching level of eye. Upper profile more convex than lower.

Body compressed, covered with small scales. Breast naked, except for a C-shaped patch of scales extending forwards between pectorals and ventrals almost to gill-opening. Scales also extend on part of pectoral fin and over anterior halves of soft dorsal and anal lobes as thick pads, in addition to the usual basal sheaths. Curved portion of lateral line typically longer than straight portion, their junction below the 14th dorsal ray and over the 7th or 8th anal ray. Scutes commence above posterior end of anal

(1) Named in honour of Skipper Haevik Claeszoon van Hillegom (of the Dutch vessel *Zeeewolf* which approached North-western Australia in 1618), who observed seaweeds and birds along the coastline from about 21 deg. to 28 deg. S.lat.

fin, and are deepest on the caudal peduncle. Fins as usual in Carangidae, without any produced spines or rays.

Colours in life, dull green above and on fins, silvery below. Yellow to pale olive caudal fin. Some irregular spots of bronze to grey on flanks and

	Specimen No. 9.	Specimen No. 4.	Specimen No. 10.	Specimen No. 18.
	Holotype.			
L.C.F.	545 mm.	750	670	514
Weight	5½ lb.	10	10	4
Total Length	24½ in.	33	-30	
Head	150 mm.	195	185	146
Depth	160	195	168	158
Eye	26	27	24	25
Interorbital	41	55	61	
Postorbital	60	89	80	
Preorbital	48	40	28 to 50	
Snout	60	80	70	
Maxillary	60	74	70	
Predorsal Length . . .	197			
Gill-rakers	7/13.	6/16	6/20	6/16
Scales on curved part of l.lat.	c.67			
Scutes	13	16	18	13
Length of straight portion of l.lat. . . .	177	255	230	
Length of curved portion of l.lat. . . .	213	255	240	
Depth of Scutes	9	14	13	
Depth between first Dorsal and Ven- trals origins	154	195	168	
Base of Second Dorsal	200	275	240	
Dorsal	vii./i., 28	vii./i., 28	vii./i., 30	vii./i., 29
Anal	ii./i., 24	ii./i., 24	i./i., 27	ii./i., 23
Pectoral	ii., 19			
Caudal	16			
Length of Pectoral. Length of soft Dorsal Lobe	193 mm.	237	215	
Length of Anal Lobe	87	95	69	
Length to middle of Caudal Peduncle. Depth of Caudal Peduncle	77	95	75	
	482	675	600	
	18		18	
Locality	S.W. of Cape Baskerville, W.A.	Off Whaling Station, near Point Cloates.	16 m. N. of Cape Preston = variety <i>prestonensis</i> , nov.	Whaling Station, Point Cloates.

a couple of large dark blotches on straight part of lateral line. Pupil blue, iris bronze.

Described and figured from the holotype of the species, a male 545 mm. in length to middle caudal rays, or $24\frac{1}{2}$ inches overall and $5\frac{1}{2}$ lb. in weight.

Type locality: South-west of Cape Baskerville, Western Australia.

Dimensions and formulae of the holotype and three other specimens are as in the foregoing table. Their stomachs contained various small fishes, often too digested for determination, apart from a mackerel (*Rastrelliger*) and a Leatherjacket, also a scallop and crustaceans; amongst the latter Mr. Keith Sheard noted "Pagurid *Glaucothoe* and Squillid larvae *Alima*."

Variation: Nine specimens (Nos. 1 to 8 and 18), 45 to 82 cm. long, trolled from the Point Cloates to North-west Cape area, showed no important variation from the holotype, but an elongate variety of this species was encountered 16 miles north of Cape Preston, Western Australia, which had the characters tabulated above, depth 3.9 in L.C.F., and coloration as follows.

Colours: In life, very pale greyish-blue to faint greenish above, becoming white on the sides and below. Sides of body with a few scattered round grey spots, smaller than pupil; no large blotches. Pupil black, iris bronze to pale grey. Fins pale olive-grey, not yellow; the anal and caudal with very narrow milky-white margins. Inner pectoral axil dark grey. A dark grey blotch on second dorsal and anal lobes became more pronounced after death. Flesh dark red.

This may be known as var. *prestonensis*, nov.

Comparison with allied species: The new species and variety can be immediately distinguished from congeners by the size and position of the eye, depth of preorbital, numbers of fin-rays, small number of scutes not extending far forward, convex profile, form and proportions as described above. The genus *Ferdauia* accommodates several species of Trevallies which have mostly been grouped by authors into a species known as *Caranx* or *Carangoides Jerdau* (Forsk.). Actually, Forskal's work (Descr. Animalium, 1775, p. 55) is not binomial, his "*Scomber ferdau*" from Djedda, Red Sea, having first been latinized by Bonnaterre (Tabl. Encycl. Meth. Ichth., 1788, p. 141). The Red Sea type differs from mine in having transverse bars on the body. The Trevallies which appear to be referable to *Ferdauia* are *bajad* (Ruppell, 1831); *evermanni* (Nichols, 1921); *ferdau* (Bonnaterre, 1788); *fulvoguttatus* (Ruppell, 1831); *hemigygnostethus* (Bleeker, 1851); *jordani* (Nichols, 1922); *laticaudis* (Alleyne & Macleay, 1877); and *venator* (Playfair, 1868), from the Red Sea, Hawaiian Islands, East Indies, New Guinea and Seychelles, besides my new Western Australian forms. The following may be allied but not congeneric: *Carangoides aureoguttatus* Bleeker, 1853; *Caranx gilberti* Jordan & Seale, 1906; and *Caranx novaeguineae* Cuvier & Valenciennes, 1833.

Genus *CARANX* Lacepede, 1802.

CARANX PAPUENSIS Alleyne & Macleay, 1877.

(Plate xi., fig. 3.)

Caranx papuensis Alleyne & Macleay, Proc. Linn. Soc. N.S. Wales, i., 1877, p. 325, pl. x., fig. 3. Hall Sound, New Guinea. *Id.*, McCulloch, Mem. Qld. Mus., viii., 1924, pp. 67 and 69, pl. xiii.

Isobel specimens of this species, which is new to the fish-fauna of Western Australia, had the following characters:—

Lips rounded, coriaceous; jaws subequal or lower jaw the longer. A row of strong canines, enlarged anteriorly, and outside a band of cardiform teeth in each jaw. Patches of villiform teeth on the vomer and palatines. Maxillary reaches to below middle or nearly to posterior margin of eye. Upper profile much more convex than lower. Gill-rakers spinulose superiorly; about three to five rudiments, plus 2 or 3/10 to 14 on first branchial arch.

Body and fins as usual in Carangidae. A naked patch between bases of ventrals and isthmus; body-scales encroaching well in advance of a line joining pectoral and ventral bases. A patch of vestigial median scales before ventrals in specimen 1; naked in others. Straight portion of lateral line longer than curved, the junction of the two below 7th to 9th dorsal and over 1st to 3rd anal ray. Depth of scutes greatest at or just before caudal peduncle. Scutes very strong and sharp, those of one fish cutting right through one of my toe-nails as the fish flapped about on deck. Scutes extend all along straight part of l.lat. No produced spines or rays.

D. vii. to viii./i., 19 to 21; A. ii./i., 15 to 17.

Dimensions (in mm. unless otherwise stated) and other numerical characters.

Specimen	1	2	3	4	5	6	7	8	9	10	11
L.C.F. in mm.	660	777	613	450	760	725	620	715	850	710	710
Weight in lb.	14	18	10	4½	19	16	11	16	24	15½	14½
Total length in in.	30	33	27½					32			
Head in mm.	190	206	167					203	222		
Depth	212	245	204					245	235		
Eye	27	30	27					26	38		
Interorbital	59	62	50					61.5			
Postorbital	104	111	92					102			
Preorbital	47	46	39					51			
Snout	60	65	53					66			
Maxillary	88	96	80					96			
Scales on curved part											
of lateral line		54	55					55			
Scutes	27	29	32					32	29	35	29
L.lat. straight part											
(mm.)	260	290	239					292			
L.lat. curved part	218	246	193					240			
Depth of scutes	30	28	22					29			
Depth between first											
dorsal and ventral											
origins	214	237	200					230			
Base of second dor-											
sal fin	230	262	200					255			
Length of pectoral	209	246	208					236			
Dorsal lobe	117	123	115					132			
Anal lobe	110	124	108					118			
Length to middle of											
caudal peduncle	590	660	540					610			
Depth of caudal											
peduncle	—	22	20					23			
Sex	m.	f.	m.	m.	m.	m.	f.	f.	f.	f.	f.

Life colours: Dull pale greenish above and on fins, though these are smoky grey distally and the caudal is slate-grey. Pupil dark blue; iris dark brown. Pectoral axil dark grey. Lower parts silvery. (Specimens 1 to 7, etc.)

In specimen 8, the sides of the body had numerous dark grey flecks of different sizes, but all much smaller than pupil, smallest and densest about curved portion of lateral line and changing their number and shape. Other-wise ground-coloration normal.

In specimen 9, the posterior margins and tips of second dorsal and upper caudal lobes were mustard yellow.

Stomach contents were usually too digested for identification but were mostly fishes up to about 7 inches long, but one had fed on crabs. Specimens were immature at 620 mm. and even the largest ones were not fully developed.

Eleven examples were caught by trolling at these localities: (1) off Frazer Island, Point Cloates, September 8, 1945; (2 to 5) off North-west Cape, September 10 to 11; (6 and 7) Monte Bello Islands, September 18; (8) off Cape Bertholet, October 8; (9) about 23 miles south-west of Broome, October 21; and (10 and 11) 16 miles north of Cape Preston, October 31. These ranged from 45 to 85 cm. in L.C.F. and weighed from $4\frac{1}{2}$ to 24 lb.

Mr. F. J. Rankin gave me another example from Onslow.

Mr. M. MacBolt sent me a drawing of another, $51\frac{1}{2}$ inches in total length and weighing 62 lb., gutted, which he caught at Ningaloo, Point Cloates, on November 19, 1944. Three days earlier he had obtained one there 29 inches long with weight 15 lb. The gut of the larger one contained an octopus, the longest tentacle of which was 18 inches.

Genus *SCOMBEROIDES* Lacépède, 1802.

SCOMBEROIDES SANCTIPETRI (Cuv. & Val., 1832).

On October 16, 1945, in Hadley Passage, King Sound, W.A., a Whitefish new to the Western Australian fauna, was caught, although I had earlier seen photographs and specimens from other parts of the coastline. The King Sound specimen was 865 mm. long (L.C.F.) or 29 inches overall and weighed $5\frac{1}{2}$ lb. Maxillary (61 mm.) reaching below posterior part of eye. D.vi./i., 20; A.ii./i., 18. Head, 121 mm.; eye, 18; depth, 150. Gill-rakers, 7/16. Scales lanceolate.

Life colours: Grey above, silvery on sides, white below; five U to V-shaped grey marks (traditionally the finger-prints of St. Peter) below the lateral line anteriorly; four diffuse dusky blotches above the lateral line correspond to the posterior four "finger-prints"; a butter-yellow tinge along abdomen. Pupil black, surrounded by a smoky-coloured area; rest of iris whitish. A large black blotch covers distal half of second dorsal lobe. Pectorals greyish to dull yellow, with greenish-grey axil. Ventrals bright yellow with slight grey median marks and broad white margins. Anal white with slight blackish blotch on centre of lobe and some yellow anteriorly. Dorsal finlets grey; anal finlets white. Caudal pearly grey, median rays dirty whitish.

The fish was fat and in good condition; female with roes bright yellow, 260 by 45 mm., separated by the forwardly situated anal interhaemals to either side of which the coelome extended posteriorly so that the gonads reached back to over the seventh anal ray.

Family SCIAENIDAE.
 Genus SCIAENA Linné, 1758.
 SCIAENA ANTARCTICA REX Whitley, 1945.
 (Fig. 2.)

Sciaena antarctica rex Whitley, Austr. Zool., xi., June 11, 1945, p. 26. Onslow, Western Australia.

This subspecies has not hitherto been figured, so I give here a description and illustration of a $3\frac{1}{2}$ foot female which I caught at North Turtle Island, off Port Hedland, W.A., in September, 1945.

D.x., i., 23; A.ii., 7; P.ii., 17; V.i., 5; C.14.

L.lat. 48 to hypural + 6 along tail. Tr. 9/1/20.

Head (265 mm.) 3.5, depth (242) 3.4 in standard length (930). Eye (38) 7 in head. Preorbital, 28 mm.; interorbital, 60; maxilla, 99, its end 38 deep; snout, 60; postorbital, 169; predorsal length, 308; first dorsal base, about 200; second dorsal base, 344; longest (fourth) dorsal spine, 144; anal base, 88; second anal spine, 75; pectoral length, 148 (fifth ray longest); pectoral base, 36; length of ventral fin, 137; middle caudal ray, 119; depth of caudal peduncle, 75 mm.

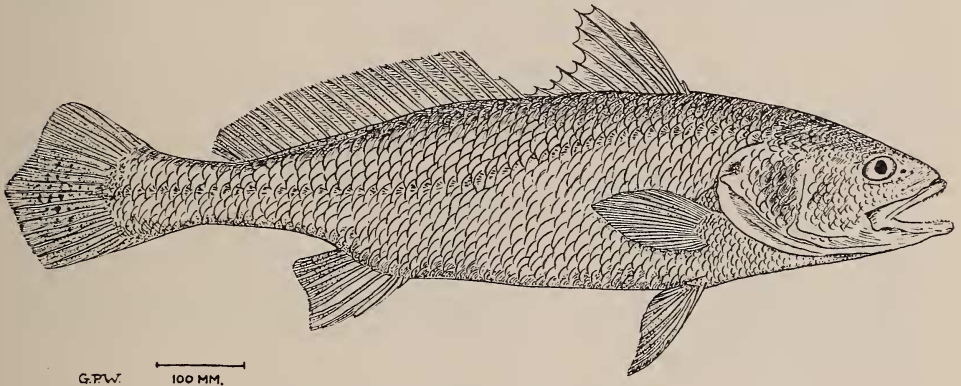


Fig. 2. Mulloway, *Sciaena antarctica rex* Whitley. A specimen from Turtle Island, off Port Hedland, Western Australia.

Maxillary extending to below posterior margin of eye, partly sheathed by preorbital. Lips coriaceous. An outer uniserial row of short canines, largest anteriorly, in upper jaw, behind these a strip of villiform teeth; one to three rows of small canines along lower jaw. Vomer and palatines toothless.

Gill-rakers, 4-6. Preopercular margin with some spaced points. No noteworthy pores on head.

General facies as in *Sciaena antarctica* and as figured here. Second anal spine slender, not strong. Articulations of the fin-rays small and numerous.

General colour bronze, with some yellow below head and coppery on operculum. Unpaired fins dark reddish brown with a few indistinct dark spots on middle of tail. Pectorals dark yellowish. Ventrals dark yellowish

anteriorly but becoming light grey posteriorly. Eye bronze. Inside of mouth yellow. The dark coloration suggests a muddy habitat.

Vertebrae 14, to over anal origin, plus 9 = 23. Stomach was empty. Each roe was about 250 by 28 mm. and there appeared to be two small auxiliary roes besides the main ones. Some tapeworms in the flesh.

Described and figured from a female specimen, 1,075 mm. or almost 3½ feet long and 27½ lb. in weight.

Locality: Three miles offshore, North Turtle Island, off Port Hedland, Western Australia; hooked on mullet (*Moolgarda pura*) bait, September 27, 1945.

A second specimen, one of eight caught off the jetty at Onslow on November 4, 1945, was a male, 3 ft. 1 in. (940 mm.) in total length; weight 17 lb. whole. Standard length, 820 mm. Head, 233; depth, 215; eye, 32; maxillary, 91, reaching below posterior half of eye; pectoral length, 130. Anal margin truncate.

Br. 7; D.x., i., 23; A.ii., 7; P.ii., 17; L.lat. 50 to hypural + 5 to base of middle caudal rays. Small median scales to end of tail. L.tr. 13/1/18.

Gill-rakers, 6-7. Stomach empty. General characters as in Turtle Island example.

Family SCOLOPSIDAE.

SCAEVIUS, *gen. nov.*

Orthotype, *Scaevius nicanor*, sp. nov.

This new genus differs from most of the many genera or subgenera which have been variously grouped around *Nemipterus* or *Synagris*, *Pentapodus*, *Dentex*, etc., by authors, notably in having no canine teeth, the dentition consisting of bands of fine teeth on jaws and none on palate. There is no strong suborbital spine as in *Scolopsis* and its subgenera. Other striking features are the rather numerous cheek-scales; naked preopercular flange, suborbital and interorbital; ovate body-form, dorsal margin not deeply notched, and moderate sized eyes. Other characters as described for the species.

SCAEVIUS NICANOR, *sp. nov.*

Upper profile gently convex, the lower much less convex. Lips fleshy, maxillary not reaching below eye, partly sheathed by preorbital, but without a toothed ridge as in *Gnathodentex*. Mouth not very protractile, though premaxillary pedicels are longer than eye. No symphysial knob. Bands of fine, small teeth on jaws. Apparently none on vomer or palatine ridges. No canines, incisors or molars. Velum maxillare present. Tongue acutely rounded. Preorbital broad and deep, naked, entire anteriorly but denticulated posteriorly and ending in three small spines below eye, none of them distinct as in *Scolopsis*. Preoperculum entire, evenly rounded, spineless, its flange naked. Chin and the weakly convex interorbital scaleless. Nostrils small, approximate, the anterior with raised rims. About six rows of cheek-scales. Opercula scaly, entire. A small opercular spine almost covered by scales. Vertex scaly. Eyes moderate with free, entire margin, and a subocular shelf. Five branchiostegals. No barbels or noteworthy pores on chin. Gill-membranes united before isthmus. About 6 or 7 stumpy gill-rakers on lower part of first branchial arch.

Head (59 mm.) 2.8, depth (56.5) 2.9 in standard length (165). Eye (13.5) 4.3, interorbital (17) 3.4, snout (20) 2.9 in head.

Preorbital, 13 mm. Predorsal length, 63. Depth of caudal peduncle, 20.5. Longest (third) dorsal spine, 24.5. Pectoral length, 39. Ventrals, 39. Third anal spine, 15.5. Upper caudal lobe, 43. Total length, 8 inches.

Body elongate-ovate, rather robust anteriorly, and somewhat compressed posteriorly, covered with fairly large, imbricate, ciliated and pitted scales, fairly uniform in size, and which do not form sheaths for the fins, although some encroach upon the pectoral and caudal fins and there is a small pointed axillary scale to each ventral fin. Cleithrum not exposed. Lateral line continuous, running parallel to and near the dorsal profile. Each central lateral line-scale tube divides into two which pierce the scale-border to form two notches. L.lat. 42. L.tr. $3\frac{1}{2}/1/16$ between origins of dorsal and anal, to $3/1/4$ across caudal peduncle. Between the lateral line and the dorsal fin are $2\frac{1}{2}$ to $3\frac{1}{2}$ scales. Vent slightly in advance of anal fin.

Dorsal fins connected, not notched, and with membranes not deeply incised, the first dorsal fin composed of slender, homocanth, rather weak spines, none produced or notably lengthened, the second dorsal fin consists of branched rays with few articulations, the last not lengthened. D.x., 9; A.iii., 7; P.16; V.i., 5; C.15 branched rays.

Three anal spines, increasing in length backwards, continuous with the soft fin. Pectoral rays longest above, mostly branched; no simple finger-like rays. Ventrals pointed, reaching anal origin. Caudal slightly forked, upper lobe longer, neither lobe produced into filaments.

Colours in life: Dark olive on top of head, paler along back. Eye orange with blue and milky bars through it. Bright blue bar across interorbital, two broader blue bars across top of snout, two narrower blue bars obliquely forward on preorbital, other paler blue marks on the brown ground colour of the upper lip. A blue fleck over margin of interoperculum and orange to blue tinges along lower limb of preoperculum. Three radiating blue bars backwards from eye (1) across postorbital, (2) over operculum and continued to tail, and (3) to base of pectoral. A paler blue stripe over eye and along back to below soft dorsal. Spaces between blue bars brownish, scales with dark grey edges. Belly white. Lateral line greyish. A conspicuous black ocellus, encircled by blue, on upper scales before caudal root.

Dorsal yellow to pale pink with submedian row of milky marks and some similar inframarginal smaller milky marks posteriorly. Anal yellow proximally and pink distally with a few oblique rows of milky spots. Pectoral yellow to pink, with grey base. Ventrals and caudal pale pink, the median membrane of the caudal blue.

Described from the holotype, eight inches in total length. Austr. Mus. Regd. No. IB.1496.

Locality: Gregory, Cape Peron, Shark's Bay, Western Australia; August 30, 1945. Coll. G. Whitley.

Two paratypes, about $5\frac{1}{2}$ inches long, were received by the Australian Museum from Darwin from Messrs. Christie and Godfrey in 1903 (Regd. Nos. I.6056 and 6057). The late W. E. J. Paradise collected two more, $6\frac{1}{2}$ to $6\frac{3}{4}$ inches long at the Sir Edward Pellew Islands, Gulf of Carpentaria,

in 1923. (Regd. Nos. IA.1471 and 1650): "Caught on sand flat by net." This new species therefore ranges from Western Australia to the Northern Territory. Suggested vernacular name, Jurgen.

LUNICAUDA, *gen. nov.*

Orthotype, *Mesoprion?? emeryii* Richardson (Icones Piscium, 1843, p. 7, pl. iii., fig. 2, from Barrow Island, North-west Australia) = *Lunicauda emeryii*. New synonym: *Heterognathodon nemurus* Bleeker, 1852.

The species upon which this new genus is based was originally described by Richardson from a drawing made by Lieut. James B. Emery, of H.M.S. *Beagle*, in either January, 1838, or 1840. (2) No specimen of *emeryii* was known to exist in any Museum. Over a century after Emery, I was with the ketch *Isobel* off Thevenard Island, North-western Australia, when one of the air-crew, Corporal L. G. Matthews, caught by hand-line on garfish bait a fine specimen of this long neglected and beautiful fish.

Later we obtained a couple more in the Monte Bello Islands.

Richardson placed this species in the genus *Mesoprion* with two question marks. *Mesoprion* Cuvier & Valenciennes (Hist. Nat. Poiss., ii., 1828, p. 441) was proposed for a group of fishes with an indentation in the form of a saw on the middle of the side of the head, with teeth on vomer and palatines, long and pointed pectorals, etc. The logotype is *M. lutjanus* (Bloch) and *Mesoprion* is a synonym of *Lutjanus*.

Mesoprion?? emeryii can now be demonstrated to have the preoperculum entire, not notched, no palatine dentition, pectorals short, etc., and actually should be removed from the Lutjanidae and transferred to the Scolopsidae.

Generic description: Habit fusiform. Head conic. Mouth barely reaching eye, moderately protractile. Maxillary smooth, sheathed by pre-orbital. No symphyisial knob. No barbels. Broad bands of movable villiform teeth in jaws; no incisors or molars. Two small suberect canines on each side of the coriaceous symphysis of the upper jaw and one forwardly-directed exterior canine on each side of lower jaw. Vomer and palatines without teeth. Velum maxillare present. A rudimentary tongue, far back. Preorbital not deep, naked, entire, ending in an acute point below eye, not a definite spine as in *Scolopsis*; its border is entire and its surface has minute spaced pores. Preoperculum with small serrae along upper edge, but entire around its angle, and with its flange scaly. Chin and snout naked. The broadly convex interorbital and rest of head scaly. Nostrils small, approximate, the anterior with well-raised rims. Five or six rows of cheek-scales (excluding preopercular flange). A small opercular spine. Eyes rather large, with free entire margin and a subocular shelf. Six branchiostegals. Gill-membranes united before isthmus. About five stumpy gill-rakers on lower part of first branchial arch.

Body covered with moderate-sized, imbricate, adherent ctenoid scales

(2) More likely in 1838, as J. J. Fletcher (Proc. Linn. Soc. N.S. Wales, 1920 (1921), pp. 614-615) remarks that Emery was adding to his collection of coloured drawings of Australian fishes in September, 1839, and Richardson (Icones Piscium) had only twelve paintings, in the complete portfolio.

which do not form sheaths for the fins and only encroaching on the caudal. Small axillary scale at ventral fin. Cleithrum not exposed. Lateral line continuous, near and parallel to dorsal profile. Lateral line scales with simple tubes or pores. L.lat. 55. L.tr. about $3\frac{1}{20}$ to $2\frac{1}{2}/1\frac{1}{5}$ across caudal peduncle. Vent slightly ahead of anal fin.

Dorsal fins connected, not notched and with membranes not deeply incised. Ten to eleven rather weak spines and nine branched rays, none produced. Anal with three short spines, increasing in length backwards, and eight rays. Pectorals short, with upper rays longest. Ventrals pointed, not reaching vent. Caudal emarginate, its upper and lower lobes remarkably produced into tape-like filaments.

The life-colours were: Golden yellow on sides above and milky to whitish below; top of back vivid blue, bounded below by a yellow band entirely above the lateral line. Another yellow band from eye to upper part of caudal peduncle is bordered above and below by a tan band. A milky-white band along lower part of side. Eye bright yellow. Dorsal fins yellow with pale blue spots. Anal hyaline yellow. Pectorals and ventrals hyaline to milky. Caudal vivid purplish-blue, produced above and below into a filament of the same colour. No dark bar across pectoral base.

I had aboard the *Isobel* a water colour copy of Richardson's plate in hopes of rediscovering this species and the live fish agreed very well indeed with this.

Length to caudal fork about 9 inches. Total length, including filaments, $13\frac{1}{2}$ or 14 inches.

Generic diagnosis based on the neotype (Austr. Mus. Regd. No. IB.1549) from off Thevenard Island (in the Onslow region) and two other examples (IB.1550 and 1557) from off Hermite Island, Monte Bellos, Western Australia; September 17, 1945. *Isobel* Expedition.

I find that *Heterognathodon nemurus* Bleeker, 1852, is a synonym of *Lunicauda emeryii*, two Philippine specimens having been examined.

Affinities: Nothing quite like this fish appears to have been generically named in ichthyological literature. Its affinities are evidently with *Pentapodus*.

The external forwardly-directed lower canines, l.lat. more than 50, prolonged caudal lobes, lack of dark bar on pectoral and coloration generally, separate my new genus from the genotypes of *Pentapodus* (*vitta*) and *Heterognathodon* (*bifasciatus* = *caninus*).

The synonymy is as follows:—

LUNICAUDA EMERYII (Richardson).

Mesoprion emeryii Richardson, *Icones Piscium*, 1843, p. 7, pl. iii., fig. 2. Barrow Island, North-western Australia. *Id.* Richardson, Rept. 12th meet. B.A.A.S., 1842 (1843), p. 17. *Id.* Whitley, Rec. Austr. Mus., xix., 1934, p. 157.

Heterognathodon nemurus Bleeker, Nat. Tijdschr. Ned. Ind., iii., 1852, p. 754. Celebes.

Pentapus nemurus Bleeker, Atlas Ichth., viii., 1872, pl. 294, fig. 3; vii., 1876, p. 102, and of authors generally.

Lutjanus emeryii McCulloch, Austr. Mus. Mem., v., 1929, p. 208.

Family SARDIDAE.

Genus SARDA Cuvier, 1829.

SARDA ORIENTALIS SERVENTYI Whitley.

(Plate xi., fig. 4.)

Pelamys orientalis Temminck & Schlegel, Fauna Japonica, Poissons, 1844, p. 99, pl. lii. Nagasaki, Japan.

Sarda orientalis serventyi Whitley, Austr. Zool., xi., 1945, p. 41. Albany, Western Australia.

The holotype of the subspecies (W.A. Mus., No. P.3512), 265 mm. long to end of middle caudal rays, is now figured.

Family NEOODACIDAE.

HALETTA, *gen. nov.*

Orthotype, *Odax semifasciatus* Cuvier & Valenciennes (Hist. Nat. Poiss., xiv., "1839" = January, 1840, p. 299, pl. 407) = *Haletta semifasciata*.

Differs from other members of the family in having more than 50 (usually about 55 to 63) transverse rows of scales, instead of from about 30 to 45, as in *Neoodax* spp. The preoperculum is entire, the caudal fin rounded, and the general appearance of the monotypic species is as figured by Cuvier & Valenciennes, Richardson, Roughley, and others. Named after Mr. H. M. Hale, Director of the Museum, Adelaide.

Genus NEOODAX Castelnau, 1875.

SHEARDICHTHYS, *subgen. nov.*

Orthotype, *Malacanthus radiatus* Quoy & Gaimard (Voy. Astrolabe, Zool., iii., 1835, p. 717, pl. xix., fig. 2) = *Neoodax (Sheardichthys) radiatus*.

Distinguished from typical *Neoodax* by its acutely pointed middle caudal rays, the rest of the fin rhombic rather than rounded, whilst the preoperculum has an entire edge. About 40 to 45 transverse rows of scales.

Named in honour of Mr. Keith Sheard.

Family ELEOTRIDAE.

Genus CARASSIOPS Ogilby, 1897.

CARASSIOPS COMPRESSUS (Krefft, 1864).

Two specimens, from a well 63 feet deep, east of Carnarvon, W.A., obtained in January, 1946, by Mr. H. J. Murray, agree with McCulloch's account of this species (Rec. Austr. Mus., xii., 1919, p. 285) and are referable to the geographic form named *reticulatus* by Klunzinger from Port Darwin.

Not only do these fish constitute a new record for Western Australia, but they indicate the probable line of descent of the interesting Western Australian blind gudgeon, *Milyeringa*, of which I wrote (Austr. Zool., xi., 1945, p. 35), "perhaps evolved from some gudgeon similar to *Carassiops*, which is not known from Western Australia."

Family ALEUTERIDAE.

TANTALISOR, *gen. nov.*

Orthotype, *T. pauciradiatus*, sp. nov.

A Leatherjacket with concave profile, with the dorsal spine originating

over posterior half of eye; pelvis spine rigid, not movable; less than thirty dorsal or anal rays; dermal denticles granulated, rather toadstool-shaped with a peaked apex; and no caudal bristles or spines. This combination of characters separates it from all other genera.

TANTALISOR PAUCIRADIATUS, sp. nov.

D. ii./28; A. 28; P. 11; C. 12 (10 branched rays).

Profile of snout concave, making angle of about 145 deg. with the horizontal interdorsal space. Greatest depth (53 mm.) nearly 1.9, dorsal-anal origins (41) 2.4, head (31) 3.2 in length without caudal (101). Eye (11.5) 2.1 in snout (25). Distance from base of dorsal spine to nearest point on orbit (7 mm.) 1.6 in eye. Gill-opening below eye. Distance between orbit and upper end of gill-opening (6) less than depth of latter (7). First dorsal spine strong (25), situated over posterior half of eye, not compressed, with four rows of barbs, the anterior pair having small adpressed barbs with the points barely free; the posterior two rows have a dozen downward and backwardly directed spines, largest above middle of spine and connected by membranes. Second dorsal spine slender, 6 mm. Interdorsal space less than head. No groove along back. Soft dorsal fin slightly elevated at its anterior quarter, with 28 rays, its base (32 mm.) subequal to head. Anal fin oblong, with 28 rays, its base, 30 mm. Eleven simple pectoral rays. Pelvic spine large, tuberculate, rigid, reaching not far from vent. Belly not greatly distensible. Ventral flap spongy, not exceeding spine. Scales with a rather toadstool-shaped granular spinule with peaked apex rising on a pedicle from a radially striated scale-base with polygonal outline. On sides of back the spinules or denticles form groups of 3 to 7. Lateral line indiscernible. No dermal filaments and no bristles or antrorse spines on the caudal peduncle which is longer (14 mm.) than deep (11). Caudal rounded, middle ray (25 mm.) shorter than head. No produced fin-rays.

Life colours: In general, dull green with many small dark-green spots on sides of back; a darker-toned blotch behind gill-slit. Some dark green oblique lines on sides of head reaching to below pectoral fin. Pupil blue, iris yellow. Three dusky bars cross chin. Vivid blue to milky spots along belly. Pectoral green. Second dorsal and anal fins orange. Tail olivaceous with a blackish ocellus above and below near posterior ends of rays. After eight months' preservation, the colours have altered to mostly dull olive of various tones. Several rows of black dots along upper sides. First dorsal membrane edged dark smoky. Caudal dull olive with dark grey, round spot above and below. Other fins dull yellowish. Eye blue. Teeth greenish yellow with brown tips.

Described from the unique holotype, a specimen 126 mm. or 5 inches long. Austr. Mus. Regd. No. IB.1641.

Locality: Cape Peron, Shark's Bay, Western Australia; 31/8/45. Coll. G. P. Whitley and presented by C.S.I.R. Division of Fisheries.

Family LAGOCEPHALIDAE.

CONTUSUS, gen. nov.

Orthotype, *Tetrodon richei* Fréminville, Nouv. Bull. Sci. Soc. Philom., iii., April, 1813, p. 250, pl. iv., fig. 2 = *Contusus richei*.

This common southern Australian toadfish, originally described from "Nuytsland," i.e., South Australia, I have collected in South-western Australia. It is also known from Victoria, Tasmania, southern N.S.W. and N.Z., but records of it from the Northern Territory, East Indies and Japan are either referable to other species or caused through uncertainty as to the type locality Bleeker (Verh. K. Akad. Wetensch. Amsterdam, ii., 1855, p. 24, figs. 3, 3a) figured a Hobart example and included the species in his Atlas Ichthyologique des Indes Orientales Neerlandaises (1865).

From Fraser-Brunner's review (Ann. Mag. Nat. Hist. (11), x., 1943, p. 11) it is evident that Fréminville's species is near, or in, the genus *Amblyrhynchotus* Troschel (Arch. Naturg., xxii., 2, 1856, p. 88, ex Bibron MS. in Dumeril, Rev. Mag. Zool. (2) vii., 1855, p. 274) but that name is pre-occupied by *Amblyrhynchotus* Tilesius, 1818, a genus of Crustacea. I therefore propose the name *Contusus*, with *richei* as type, and to replace *Amblyrhynchotus* for the other species, if all be congeneric; the distinguishing characters are given in Fraser-Brunner's key.

NEW RECORDS OF FISHES FROM WESTERN AUSTRALIA.

Since the appearance of my last list in part two of this paper (this volume, p. 40), I have identified the following species new to the Westralian list. Some of the following were dredged years ago by Mr. A. A. Livingstone, the Onslow ones came from Mr. F. J. Rankin, Messrs. Jenkins and Buller obtained data from the Ord River, and others were collected by myself or identified from specimens in museums.

- Nebrodes concolor ogilbyi* Whitley. Lacepede Islands and Onslow.
Atelomycterus macleayi Whitley. Egg-case from Turtle Island.
Protozygaena longmani (Ogilby). Derby.
Flakeus megalops (Macleay). Bunbury.
Pastinachus sephen ater (Macleay). Port Hedland, Dolphin Island, and Monkeymia, Shark's Bay.
Taeniura lymnia halgani (Lesson). Airlie Island and Monte Bellos.
Escualosa melanura (Cuv. & Val.). Onslow and Port Hedland.
Plotosus flavolineatus Whitley. Broome.
Thaerodontis favagineus (Bloch & Schneider). Gantheaume Point.
Macroramphosus elevatus Waite. South-western Australia to west of False Entrance, Shark's Bay.
Hippichthys gazella, sp. nov., Broome. Rings 16 + 38, snout half head, dorsal origin slightly behind level of vent, on 6 tail-rings, otherwise near *H. poecilolaemus* (Peters, 1869).
Choeroichthys brachysoma serialis (Gunther). North-western Australia.
Hippohystrix spinosissimus (Weber). Broome and Cape Bossut.
Ardeapiscis welsbyi (Ogilby). Port Hedland and Fremantle.
Cyttus mccullochi, sp. nov. D.ix., 35; A.ii./37; P.i., 16; V.i., 6. L.lat. c. 100. Pectorals and ventrals shorter than eye. Anterior profile evenly convex. Depth of body much less than length without caudal peduncle. Ventral profile moderately convex. Length, 10½ inches. Great Australian Bight, 190-320 fathoms. Formulae and shape (cf. fig. 3) diagnostic.
Pseudorhombus duplilocellatus Regan. Between Cape Jaubert and Wallal.
Aesopia heterorhinos (Bleeker). Western Australia.
Achlyopa nigra (Macleay). Onslow.
Polyprionum (Hectoria) oxygeneios (Bloch & Schneider). Great Australian Bight, 100 to 120 fathoms, March, 1912.

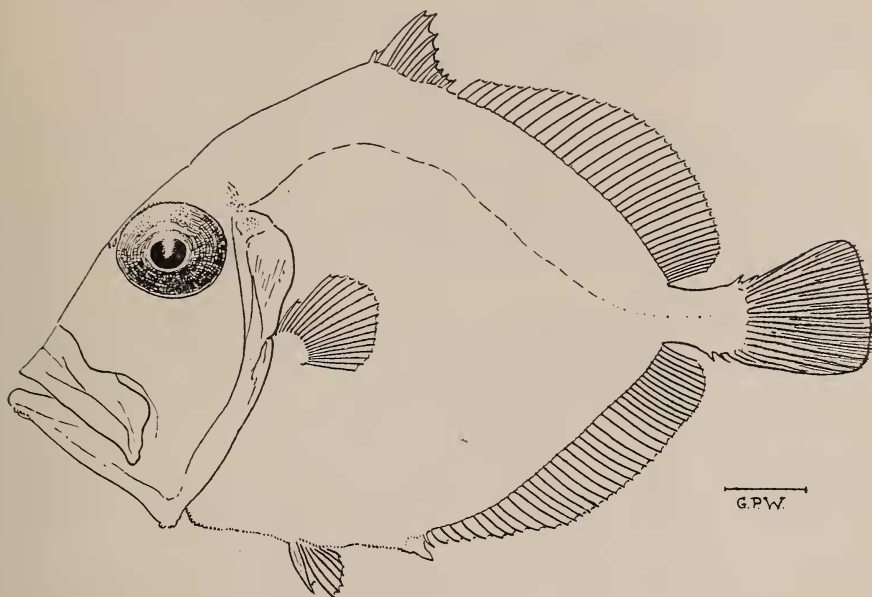


Fig. 3.—McCulloch's Dory, *Cyttus mccullochi* Whitley. Type.

Epinephelus megachir alatus Alleyne & Macleay, 1877. Port Hedland.

Pristiapogon brevicaudatus (Weber). Dredged between Broome and Cape Bossut.

Hemiramphus quoyi Cuv. & Val. Dampier Archipelago and Exmouth Gulf.

Chromileptes altivelis (Cuv. & Val.). Gantheaume Point.

Leptochromis tapeinosoma wilsoni Whitley. Cape Leveque.

Fowleria aurita (Cuv. & Val.). Cape Leveque.

Scomberoides sanctipetri (Cuv. & Val.). King Sound.

Selaroides leptolepis (Cuv. & Val.). Onslow.

Acanthoperca gulliveri (Cast.). Ord River.

Loxolutjanus erythropterus annularis (Cuv. & Val.). Onslow.

Pomadasyd maculatum (Bloch). Onslow.

Caprupeneus jeffi (Ogilby). Onslow.

Zabidius novemaculeatus (McCulloch). Onslow and Truscott.

Katsuwonus pelamis (Linne). Between Abrolhos and Geraldton, off Leander Reef and False Entrance and Point Cloates.

Parapomacentrus sp. nov. Cape Leveque.

Pseudopomacentrus fasciatus (Macleay). Cape Leveque.

Scarus fasciatus Cuv. & Val. Rat Island, Abrolhos and Shark's Bay.

Meiacanthus grammistes (Cuv. & Val.). Cape Leveque.

Clinus perspicillatus Cuv. & Val. North Beach.

Remilegia australis (Bennett). Bicton, near Fremantle.

Abcichthys praepositus (Ogilby). Near Broome.

Apistops caloundra (De Vis). Onslow.

Monacanthus (Sarothrura) hajam Bleeker. Between Cape Jaubert and Wallal.

Anoplocapros amygdaloides Fraser-Brunner. Cottesloe.
Paracanthostracion sp. Pelsart Island.
Liosaccus aerobaticus Whitley. Broome.

NEW GENERIC NAMES.

The following fishes, not all of them Westralian, require new generic names. For references, see Austr. Mus. Mem., v., 1929, and Neave's Nomenclator Zoologicus.

- ACHLYOPA**, nov. (Synapturidae). Orthotype, *Synaptura nigra* Macleay, 1880 = *Achlyopa nigra*. The Black Sole is not a *Synaptura* but is much nearer *Euryglossa* Kaup, 1858, but that is preoccupied by Smith, 1853, in Insecta.
- AIDABLENNIUS**, nov. (Blenniidae). Orthotype, *Blennius sphynx* Cuv. & Val. (Hist. Nat. Poiss., xi., 1836, p. 226) = *Aidablennius sphynx*. Equivalent to the "Sphynx" group of the subgenus *Salaria* Forskal (non-binomial) of the genus *Blennius* in Norman's Synopsis (Ann. Mag. Nat. Hist. (11) x., 1943, p. 801) and sufficiently distinguished there from typical *Blennius (ocellaris)* to deserve a new name.
- ALTISERRANUS**, gen. nov. (Epinephelidae). Orthotype, *Serranus jayakari* Boulenger, Western Australian specimens. Distinguished from "*Epinephelus*" spp. by its long third dorsal spine, scaly maxillary, concave or truncate caudal fin, high body and plain coloration.
- BATHYPYGIDIUM**, nov. (Pygidiidae). Orthotype, *Pygidium totae* Miles, 1942 = *Bathypygidium totae*. New name for *Bathophilus* Miles (Caldasia, v., 1942, p. 57), preoccupied by Giglioli, 1882, for another fish genus.
- EOPEYERIA**, nov. (Tachysuridae). Orthotype, *Ariopsis aegyptiacus* Peyer, 1928 = *Eopeyeria aegyptiacus*. Replaces *Peyeria* Whitley (Austr. Nat., x., 1940, p. 242), preoccupied by Weiler, 1935, for a fossil sawfish.
- IDIOTROPISCIS**, nov. (Syngnathidae). Orthotype, *Acentronura australe* Waite & Hale, 1921 = *Idiotropiscis australis*. Quite distinct from the Japanese *Hippocampus gracilissimus*, type of *Acentronura*, having the dorsal edges not continuous with those of tail, in body rings, etc.
- OPTIVUS**, nov. (Trachichthyidae). Orthotype, *Trachichthys elongatus* Gunther, 1859 = *Optivus elongatus*. Allied to *Hoplostethus* Cuv. & Val., 1829, but differing in having the form more elongate, and only four dorsal spines instead of six.
- ORBONYMUS**, nov. (Callionymidae). Orthotype, *Callionymus (Calliurichthys) rameus* McCulloch, 1926 = *Orbonymus rameus*. From *Callionymus*, differs in its serrated preopercular spine and branched dorsal rays and from other Australian dragonets by the key characters given by McCulloch.
- PENICIPELTA**, nov. (Aleuteridae). Orthotype, *Monacanthus guntheri* Macleay, 1881 = *Penicipelta guntheri*. Distinguished from other Leatherjackets by the development of the remarkable brush of setae on each side of the body posteriorly.

EXPLANATION OF PLATE XI.

1. Sea Pike, *Sphyræna akerstromi* Whitley. Type.
2. Skipjack, *Ferdauia claeszooni* Whitley. Type.
3. Trevally, *Caranx papuensis* Alleyne & Macleay.
4. Oriental Bonito, *Sarda orientalis serventyi* Whitley. Type.